

Notes on Some Eulophinae (Hymenoptera, Chalcidoidea, Eulophidae) in Korea II

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Abstract Twenty-seven species of Entedoninae are reported, of which a new species, *Chrysonotomyia sudoensis* n. sp., is described and thirteen species are new to Korea.

Key words Hymenoptera, Chalcidoidea, Eulophidae, Entedoninae, Korea.

INTRODUCTION

The present paper is the third of a series which will give a survey of the Korean eulophid fauna, based upon the author's collections. Twenty seven species, of which 4 unnamed, of the subfamily Entedoninae are enumerated in this report. Of these, a new species *Chrysonotomyia sudoensis* n. sp. is described and 13 species are recorded for the first time from Korea.

I wish to thank Dr. K. Kamijo, Hokkaido, Japan, for his determination of some species and for the reprints of his valuable papers.

SYSTEMATICS

1. *Ceranisis menes* (Walker, 1839) 총채민좀벌 (신칭)

Pteroptrix menes Walker, 1839. Monogr. Chalciditum, 1 : 18.

Diglyphus aculeo Walker, 1948. List spec. Hym. insects Brit. Mus., part 2, Chalcidites, p.236.

Tripoctenus brui Vuillet, 1914. C. R. Seanc. Soc. Biol. Paris, 75 : 553; Ishii, 1933. Kontyu, 7 : 13; Sakimura, 1937. Kontyu, 11 : 370.

Epomphale auriventris Girault, 1915. Mem. Qd. Mus., 3 : 211.

Epomphale rebensteina Girault, 1934. New Capsidae and Hymenoptera, with note on an unmentionable, p.3.

Euderomphale menes (Walker) : Erdős, 1956. Fol. ent. hung. (s.n.), 9 : 25.

Tripoctenus sp., Kurosawa, 1931. Kontyu, 5 : 188.

Ceranisis brui (Vuillet) : Tachikawa, 1986. Trans. Shikoku Ent. Soc., 17 : 267.

Ceranisus menes (Walker) : Graham, 1959. Trans. Soc. Brit. Ent., 13 : 203; Graham, 1963. ibidem, 15 : 271; Boucek & Askew, 1968. Palearctic Eulophidae, Index ent. Ins., p.137; Boucek, 1989. Australasian Chalcidoidea, p.734.

Specimens examines. Korea—1 ♀, 28.IV.1983. Suweon, GG; 1 ♀, 17.IV.1982. Mt. Baikbong-san, GG. Japan—5 ♀, 1 ♂, 1.VIII.1973. flowers on *Castanea crenata*; 31 ♀, 1 ♂, 25.X.1973. Kamiozoegawa, Fuji, Saga Pref. (K. Yamagishi).

Host. *Taeniothrips* sp. and *Thrips tabaci* Lindermann on onion; *Taeniothrips alliroum* Prisner (Ishii, 1933; Sakimura, 1937).

Distribution. Korea, Japan, Europe, Oriental Region, Polynesian, Antillean, South America.

2. *Chrysocharis albicoxis* Erdős, 1958 흰다리민좀벌 (신칭) [Fig. 7]

Chrysocharis albicoxis Erdős, 1958. Acta zool. hung., 3 : 217; Graham, 1963. Trans. Soc. Brit. Ent., 15 : 232; Boucek & Askew, 1968. Palearctic Eulophidae, Index ent. Ins., p.103; Hansson, 1985. Ent. Scand. Suppl., 26 : 56.

Specimens examined. Korea—1 ♀, 5.VIII.1980, Suweon, GG; 1 ♀, 17.IV.1982, Mt. Baikbong-san, GG.

Host. Unknown.

Distribution. Korea, Europe.

Remarks. The host of this species is unknown. The species is very easily distinguished from related species by the white color of the coxae. It is newly recorded from Korea.

3. *Chrysocharis arctica* (Erdős, 1950) 백두산민좀벌 (신칭)

Derostenus arctica Erdős, 1950, Fol. ent. hung. (s.n.), 3 : 55.

Chrysocharis pektusana Kamijo, 1979. Ann. hist. -nat. Mus. natn. hung., 71 : 260.

Chrysocharis arctica (Erdős) : Delucchi, 1954. Mitt. Schweiz. ent. Ges., 27 : 294; Hansson, 1985. Ent. Scand. Suppl., 26 : 100.

Host. Unknown.

Distribution. Korea, Finland, USSR.

Remarks. This species was reported from Korea by Kamijo (1979). Further information is not available.

4. *Chrysocharis assis* (Walker, 1839) 여기민좀벌 (신칭) [Fig. 2]

Entedon assis Walker, 1839. Monogr. Chalciditum, 1 : 43.

Epilampsis assis (Walker) : Graham, 1959. Trans. Soc. Brit. Ent., 13 : 192.

Chrysocharis (Kratochviliana) *assis* (Walker) : Graham, 1963. Trans. Soc. Brit. Ent., 15 : 209; Boucek & Askew, 1968. Palearctic Eulophidae, Index ent. Ins., p.104; Yoshimoto, 1973. Can. Ent., 105 : 1326.

Chrysocharis assis (Walker) : Hansson, 1985. Ent. Scand. Suppl., 26 : 88.

Specimens examined. Korea—1 ♀, 5.VIII.1977, 1 ♀, 14.X.1980, Suweon, GG; 1 ♀, 17.IV.1982, Mt. Baikbong-san, GG; 1 ♀, 24.IV.1980, Mt. Seolak-san, GW; 1 ♀, 3.VIII.1982, Mt. Gaya-san, GN.

Host. Unknown [in Europe, solitary endoparasite of *Stigmella* spp. (Lep., Nepticulidae)].

Distribution. Korea, Europe, Mongolia, North America.

Remarks. This species is a rather distinct species. It differs from other species in having the malar space extremely narrow (0.3 times as long as the diameter of antennal scape), the median carina of propodeum strongly T-shaped, and the posterior plate of petiole broadly expanded, subquadrate and reticulate.

5. *Chrysocharis crassiscapus* (Thomson, 1878) 차루민좀벌 (신칭) [Fig. 8]

Derostenus crassiscapus Thomson, 1878, Hym. Scand., 5 : 264.

Derostenus sulcatus Erdős, 1954. Ann. Hist. - nat. Mus. natn. hung., (s.n.), 5 : 347.

Chrysocharis crassiscapus (Thomson) : Delucchi, 1954. Mitt. Schwiz. ent. Ges., 27 : 297; Graham, 1959. Trans. Soc. Brit. Ent., 13 : 195; Graham, 1963. ibidem, 15 : 229; Boucek & Askew, 1968. Palearctic Eulophidae, Index ent. Ins., p.106; Hansson, 1985. Ent. Scand. Suppl., 26 : 45.

Specimens examined. Korea - 2♀, ex unidentified Agromyzidae on *Artemisia* sp., em. 5.IV.1980, Cheongsong (Mt. Juwang-san), GB; 1♀, 21.VI.1980, Suweon, GG; 1♀, 16.IV.1982, Mt. Cheonma-san, GG.

Host. Agromyzidae on *Artemisia* [Europe - *Dizygomyza posticata* Meigen (Dipt., Agromyzidae)].

Distribution. Korea, Europe.

Remarks. This species is characterized by the transverse gastral petiole with an inconspicuous, smooth anterior neck and by the fact that the occiput is carinate only in the middle. So far as I know, this species has not previously been recorded from Korea.

6. *Chrysocharis liriomyzae* Delucchi, 1954 검은다리민좀벌 (신칭)

Chrysocharis liriomyzae Delucchi, 1954. Feldmeilen, p.8.

Chrysocharis punctifacies Delucchi, 1954. Feldmilien, p.7.

Chrysocharis foveata Szelényi, 1981. Nat. Hist. Nat. Pks. Hung., 1 : 278.

Chrysocharis liriomyzae Delucchi : Delucchi, 1954. Mitt. Schweiz. ent. Ges., 27 : 297; Graham, 1959. Trans. Soc. Brit. Ent., 13 : 195; Graham, 1963. ibidem, 15 : 229; Kamijo, 1979, Ann. hist. - nat. Mus. natn. hung., 71 : 262; Hansson, 1985. Ent. Scand. Suppl., 26 : 42.

Specimens examined. Not collected.

Host. Unknown [Europe - Agromyzidae, Diptera].

Distribution. Korea (North), Europe.

Remarks. Kamijo (1979) reported *C. liriomyzae* from the northern part of the Korean peninsula. Unfortunately, I have not collected the species in the southern part yet. In Europe, it is solitary endoparasite in larvae of Agromyzidae, Diptera.

7. *Chrysocharis pentheus* (Walker, 1839) 굴과리민좀벌 [Fig. 4]

Entedon pentheus Walker, 1839. Monogr. Chalciditum, 1 : 38.

Entedon ergetelis Walker, 1848. List Hym. Brit. Mus. Chalcid., 2 : 230.

Omphalchrysocharis orientalis Girault, 1917. Des. Stellarum nov., p.20.

Chrysocharomyia elegantissima Girault, 1917. Des. Stellarum nov., p.20; Peck, 1963. Can. Ent. Suppl., 30 : 210.

Epilampsis mirabilis Sunby, 1957. Norsk. ent. Tidskr., Suppl., 2 : 40.

Chrysocharis aquilegiae Erdős, 1961. Ann. hist. — nat. Mus. natn. hung., 58 : 479.

Entedon ergetelis Walker : Dalla Torre, 1898. Cat. Hym., 5 : 37.

Epilampsis pentheus (Walker) : Graham, 1959. Trans. Soc. Brit. Ent., 13 : 193.

Chrysocharis orientalis (Girault) : Peck, 1963. Can. Ent. Suppl., 30 : 202.

Chrysocharis (Kratochviliana) pentheus (Walker) : Graham, 1963. Trans. Soc. Brit. Ent., 15 : 210; Boucek & Askew, 1968. Palearctic Eulophidae, Index ent. Ins., p.114; Askew & Coshan, 1973. J. nat. Hist., 7 : 55; Yoshimoto, 1973. Can. Ent., 105 : 1334; Kamijo, 1978. Kontyu, 46 : 462; Kamijo, 1979. Ann. hist. — nat. Mus. natn. hung., 71 : 260.

Chrysocharis pentheus (Walker) : Hansson, 1985. Ent. Scand. Suppl., 26 : 61.

Specimens examined. Korea — Many specimens reared from *Phytomyza horticola*, em. 25.V.1979, Suweon, GG.

Host. *Phytomyza horticola* Gourea, *P. ranunculi* Schrank, *P. paniculatae* Sasakawa, *Calycomyza humeralis* Roser, *Agromyza albipennis* Meigen, *A. oryzae* Manakata (Dipt., Agromyzidae); *Stigmella* sp. (Lep., Nepticulidae) [Kamijo, 1978].

Distribution. Korea, China, Japan, Europe, North America.

Remarks. Rather common species. In Europe it has been reared from lepidopterous leaf — miners and also from Tenthredinidae and Agromyzidae. It has been reared in Korea from *P. horticola*. The hosts known in Japan include the above listed six species of Agromyzidae and one of Nepticulidae, all of which were reported by Kamijo (1978).

C. pentheus is closely related to *nitetis*, but differs from the latter in having the anterior margin of mesepimeron strongly curved, the scutellum coarsely reticulate, and the postmarginal vein 1.5 times as long as the stigmal vein.

8. *Chrysocharis prodice* (Walker, 1839) 수도산민쥬벌 (신칭) [Fig. 1]

Entedon prodice Walker, 1839. Monogr. Chalciditum, 1 : 41.

Entedon daunus Walker, 1839. Monogr. Chalciditum, 1 : 43.

Entedon thoe Walker, 1839. Monogr. Chalciditum, 1 : 68.

Entedon coedicus Walker, 1846. Ann. Mag. nat. Hist., 17 : 183.

Entedon temena Walker, 1848. List Hym. Ins. Brit. Mus., Chalcid., 2 : 229.

Derostenus latipennis Thomson, 1878. Hym. Scand., 5 : 262.

Chrysocharis duriceps Szelenyi, 1979. Acta Zool. Acad. Sci. Hung., 25 : 180.

Epilampsis latipennis (Thomson) : Delucchi, 1954. Mitt. Schweiz. ent. Ges., 27 : 304.

Epilampsis prodice (Walker) : Graham, 1959. Trans. Soc. Brit. Ent., 14 : 194.

Chrysocharis prodice (Walker) : Graham, 1963. Trans. Soc. Brit. Ent., 15 : 208; Boucek & Askew, 1968. Palearctic Eulophidae, Index ent. Ins., p.115; Kamijo, 1977. Akitu, n.s., 13 : 5; Kamijo, 1979. Ann. hist. — nat. Mus. natn. hung., 71 : 260; Hansson, 1985. Ent. Scand. Suppl., 26 : 96.

Specimens examined. Korea — 1♀. ex Agromyzidae on *Lespedeza* sp., em. 28.VII.1980, Gongju (Temple Magok-sa), CN; 1♀, 25.X.1980, Seoul; 2♂, 16.IX.1982, Mt. Cheonma-san, GG; 1♀, 26.VI.1983, Chuncheon (Mt. Samak-san), GW; 1♀, 18.VIII.1983, Haenam (Mt. Duryun-san), JN. Japan — 1♀, 10.VII.1970, 1♀, 8.VII.1970, Mt. Hiko-san, Fukuoka Pref. (K. Nozato).

Host. Agromyzidae (Diptera) on *Lespedeza* sp.

Distribution. Korea, Japan, Europe.

Remarks. This species is characterized by having the gastral petiole very long, about 1.5–2.0 times as long as broad. In Europe, it is known as a parasites of *Stigmella* spp. (Lep., Nepticulidae). One female specimen was reared in Korea from an unidentified agromyzid leaf-miner on *Lespedeza* sp.

9. *Chrysocharis polyzo* (Walker, 1839) 등근머리민좀벌 (신칭) [Fig. 10]

Entedon polyzo Walker, 1839. Monogr. Chalciditum, 1 : 40.

Entedon acerbas Walker, 1839. Monogr. Chalciditum, 1 : 40.

Entedon leucippus Walker, 1839. Monogr. Chalciditum, 1 : 61

Entedon enephes Walker, 1839. Monogr. Chalciditum, 1 : 67.

Omphale palustris Goureau, 1851. Ann. Soc. ent. Fr. (s. 2), 9 : 137.

Chrysocharis plana Delucchi, 1954. Feldmeilen, p.7.

Chrysocharis depressa Delucchi, 1954. Feldmeilen, p.8.

Chrysocharis palustris Goureau : Gijswijt, 1964. Ent. Ber., Amst., 24 : 34; Gijswijt, 1965. ibidem, 25 : 91.

Chrysocharis polyzo (Walker) : Graham, 1959. Trans. Soc. Brit. Ent., 13 : 195; Graham, 1963. ibidem, 15 : 229; Kamijo, 1978. Knotyu, 46 : 463; Kamijo, 1979. Ann. hist. — nat. Mus. natn. hung., 71 : 261; Hansson, 1985. Ent. Scand. Suppl., 26 : 44.

Specimens examined. Korea—1 ♀, 20.V.1980; 2 ♀, 11.VI.1983, Suweon, GG; 2 ♀, 22.VII.1982, Mt. Bakbong-san, GG. Japan—1 ♀, 8.VIII.1970, Mt. Hiko-san, Fukuoka Pref. (K. Nozato); 1 ♀, 1.VI.1964, Hachijo Island (Y. Hirashima & M. Shiga); 1 ♀, 24.V.1953, Shikanoshima, near Fukuoka City (Y. Murakami).

Host. Unknown [Japan—*Phytomyza horticola* Goureau (Dipt., Agromyzidae)].

Distribution. Korea, Japan, Europe, Mongolia.

Remarks. This species is an endoparasite of dipterous larvae mining herbaceous plants, especieally Monocotyledonae, and the adults emerge from the host puparia. It has been reared from *P. horticola* in Japan.

10. *Chrysocharis pubens* Delucchi, 1954 가느털민좀벌 (신칭) [Fig. 5]

Chrysocharis pubens Delucchi, 1954. Feldmeilen, p.5.

Chrysocharis latifrons Gijswijt, 1965. Ent. Berichten, 25 : 87.

Chrysocharis pubens Delucchi : Delucchi, 1954. Mitt. Schwiz. ent. Ges., 27 : 290; Graham, 1959. Trans. Soc. Brit. Ent., 13 : 194; Graham, 1963. Trans. Soc. Brit. Ent., 15 : 227; Boucek & Askew, 1968. Palearctic Eulophidae, Index ent. Ins., p.115; Hansson, 1985. Ent. Scand. Suppl., 26 : 30.

Specimens examined. 1 ♀, 3. X. 1982, Mt. Cheonma-san, GG; 1 ♀, 3.VIII.1982, Mt. Gaya-san, GN. Japan—2 ♀, 27.V.1964, 2 ♀, 3.X.1964, 1 ♂, 5.VI.1964, Hachijo Island (Y. Hirashima & M. Shiga); 1 ♀, 13. VI. 1963, Mt. Hiko-san, Fukuoka Pref. (K. Takeno).

Host. Unknown [in Europ, Agromyzidae (Diptera)].

Distribution. Korea, Japan, Europe.

Remarks. *C. pubens* is a larval endoparasite of leaf-mining Diptera (Agromyzidae). It resembles *C. chilo* (Walker), but differs in having the dorsellum of the metanotum narrow, 5–6 times broader than long, with a short median carina.

11. *Chrysocharis pubicornis* (Zetterstedt, 1838) 검은민좀벌 (신칭) [Fig. 9]

Entedon pubicornis Zitterstedt, 1838. Ins. Lapponica des., p.427.

Entedon punctellus Zetterstedt, 1838. Ins. Lapponica des., p.431.

Entedon amyrtaeus Walker, 1839. Monogr. Chalciditum, 1 : 57.

Entedon cydon Walker, 1839. Monogr. Chalciditum, 1 : 58.

Entedon aesopus Walker, 1839. Monogr. Chalciditum, 1 : 74.

Entedon eropus Walker, 1839. Monogr. Chalciditum, 1 : 75.

Entedon syma Walker, 1839. Monogr. Chalciditum, 1 : 98.

Entedon hersilia Walker, 1840. Ann. Mag. nat. Hist., 4 : 235.

Entedon adreus Walker, 1848. List spe. hym. ins. Brit. Ins., part 2, Chalcidites, p.231.

Chrysocharis femoralis Foerster, 1861. Progr. Realschule Aachen, p.38.

Derostenus aeneiscapus Thomson, 1878. Hym. Scand., 5 : 267.

Chrysocharis avellanae Erdős, 1961. Ann. hist. - nat. Mus. natn. hung., 53 : 478.

Chrysocharis bipicturata Szelényi, 1977. Acta Zool. Acad. Sci. Hung., 23 : 456.

Chrysocharis asclepiadeae Szelényi, 1979. Acta Zool. Acad. Sci. Hung., 25 : 177.

Chrysocharis tranquilla Szelényi, 1981. Nat. Hist. Nat. Pks. Hung., 1 : 280.

Chrysocharis pubicornis (Zetterstedt) : Graham, 1959. Trans. Soc. Brit. Ent., 13 : 195; Graham, 1963. ibidem, 15 : 229; Hansson, 1985. Ent. Scand. Suppl., 26 : 49.

Specimens examined. Korea—1♀, 21.VI.1980, Suweon, GG; 1♀, 1.IX.1982, Geumgok, GG; 2♀, 22.IV.1982. Mt. Baikbong-san, GG; 2♀, 13.VII.1983, Mt. Weolak-san, CB; 1♀, 3.VIII.1982. Mt. Gaya-san, GB. Japan—1♀, 11.VI.1973, Kasuya, Fukuoka Pref. (Y. Yoneda); 2♂, 22.V.1983, Fukuoka City (J. C. Paik).

Host. Unknown [Japan—*Phytomyza horticola* Goureau, *P. ranunculi* Schrank (Kamijo, 1978; Sugimoto et al., 1983)].

Distribution. Korea, Japan, Europe, Mongolia, Pakistan, India, New Zealand, Australia, North America.

Remarks. In Europe, this species is known as an endoparasite of leaf-mining Diptera, Agromyzidae. It is new to Korea.

12. *Chrysocharis viridis* (Nees, 1834) 노랑허리민좀벌 (신칭) [Fig. 6]

Elachestus viridis Nees, 1834. Hym. Ichneum. aff. monogr., p.138.

Elachestus subauratus Nees, 1834. Hym. Ichneum. aff. monogr., p.140.

Entedon melaenis Walker, 1839. Monogr. Chalciditum, 1 : 47.

Entedon thersamon Walker, 1839. Monogr. Chalciditum, 1 : 48.

Entedon catitos Walker, 1839. Monogr. Chalciditum, 1 : 60.

Entedon bibulus Walker, 1839. Monogr. Chalciditum, 1 : 62.

Entedon aso Walker, 1839. Monogr. Chalciditum, 1 : 66.

Entedon tanis Walker, 1839. Monogr. Chalciditum, 1 : 73.

Chrysocharis viridicoxis Foerster, 1861. Progr. Realsch., Aachen, p.38; Delucchi, 1954. Mitt. Schweiz. ent. Ges., 27 : 286.

Derostenus punctiscapus Thomson, 1878. Hym. Scand., 5 : 264.

Derostenus appendigaster Masi, 1952. Boll. Ist. Ent. Univ. Bologna, 19 : 145.

Chrysocharis albula Delucchi, 1954. Feldmeilen, p.7; Delucchi, 1954. Mitt. Schweiz. ent. Ges., 27 : 286;

Graham, 1959. Trans. Soc. Brit. Ent., 13 : 195; Graham, 1963. ibidem, 15 : 231.

Chrysocharis punctiscapus (Thomson) : Delucchi, 1954. Mitt. Schweiz. ent. Ges., 27 : 286.

Chrysocharis melaenis (Walker) : Graham, 1959. Trans. Soc. Brit. Ent., 13 : 195; Graham, 1963. ibidem, 15 : 230; Gijswijt, 1965. Ent. Berichten, 25 : 86; Boucek & Askew, 1968. Palearctic Eulphidae, Index ent. Ins., p.110; Kamijo, 1979. Ann. hist. — nat. Mus. natn. hung., 71 : 261.

Chrysocharis viridis (Nees) : Boucek & Askew, 1968. Palearctic Eulophidae, Index ent. Ins., p.115; Hansson, 1985. Ent. Scand. Suppl., 26 : 32.

Specimens examined. Korea—3♀, 16.V.1983, Suweon, GG; 2♀, 29.V.1979, Mt. Sudo-san, GB. Japan—1♀, 13.IX.1968, Mt. Hiko-san, Fukuoka Pref. (K. Kanmiya), 1♀, 13.VI.1973, Kamiojoegawa, Fuji, Saga Pref. (K. Kanmiya).

Host. Unknown [Europe—Agromyzide (Diptera)].

Distribution. Korea, Japan, Europe, Mongolia.

Remarks. This species is easily distinguished from related Palearctic species of the subgenus *Chrysocharis* s. str., but *Chrysocharis* was previously divided into two subgenera *Chrysocharis* s. str. (of which absence of a transverse carina along pronotal collar) and *Nesomyia* Ashmead (presence of pronotal collar), but Hansson (1985) grouped into one genus.

This species is easily distinguished from related Palearctic species of the genus; the costal cell of fore wing lacks a complete row of hairs, and the gastral petiole is twice as long as broad. In North Korean material described by Kamijo (1979), the gastral petiole is brownish, the fore and mid coxae are whitish, the basal two-thirds of the hind coxae are concolorous with the thorax, and the fore wing has a large discal cloud. In the three specimens from Suweon that I have studied, the hind coxae are testaceous, except on their basal extremities. One female collected on Mt. Sudo-san has the petiole entirely yellow. In Europe, the species is known as a solitary larval endoparasite of agromyzid miners (Diptera) of numerous herbaceous plants. Adults emerge from the host puparia.

13. *Chrysocharis* sp. A. 각시민좀벌(가칭) [Fig. 3]

This species is very closely related to *Chrysocharis submutica* Graham, but differs in the color of antennal scape and fore coxae, the shorter propodeum, and the length of the marginal vein.

Specimens examined. Korea—10♀, ex' unidentified Agromyzidae on *Viola* sp., em. 8.VIII.1980, Suweon, GG.

Host. Agromyzidae (Diptera) on *Viola* sp.

Distribution. Korea.

14. *Chrysonotomyia cinctiventris* (Ashmead, 1904) 노랑꼬마민좀벌 (신칭) [Fig. 14]

Nesomyia cinctiventris Ashmead, 1904, Jour. New York ent. Soc., 12 : 161; Boucek & Askew, 1968. Palearctic Eulophidae, Index ent. Ins., p.100.

Chrysonotomyia cinctiventris (Ashmead) : Kamijo, 1976. Kontyu, 44 : 493; Kamijo, 1979. Ann. hist. — nat. Mus. natn. hung., 71 : 262; Hansson, 1990. Ent. Scand., 20 : 34.

Chrysonotomyia sp., Paik, 1978. Korean J. Pl. Prot., 17 : 178.

Specimens examined. Korea—Many specimens reared from cynipid leaf galls on *Quercus*, em. 18.

VI.1980. Suweon, GG; 2♀, 26.VI.1983. Chuncheon (Mt. Samak-san), GW.

Host. Cynipidae (Hymenoptera).

Distribution. Korea, Japan.

Remarks. This species is easily separated from other members of this genus by the color patterns of the scutellum and gaster. The following parts yellow : lateral corners of mesoscutum, axillae, lateral and hind margin of scutellum, dorsellum, prepectus, and tegulae. The gaster has a yellowish band behind the first tergite.

15. *Chrysonotomyia sudoensis* n. sp. 수도꼬마민좀벌(신칭) [Fig. 12, 13]

Female : Body green to blue green, some parts with golden reflections; frons and face bronze; antennae blackish, scape with faint metallic reflections; tegulae blackish; legs blackish, except all tibiae and tarsi pale yellow; fore and hind margins of third to sixth tergites with transverse blackish bands; last tergite and ovipositor sheath black; bristles of frontovertex dark brown; fore wing with a faint cloud below stigma. Length about 2.0mm.

Head collapsed in dry specimens, distinctly broader than thorax; malar space as long as maximum breadth of scape and 0.27 times as broad as oral fossa; anterior margin of clypeus almost straight; mandible bidentate; eyes pubescent, covered with short hairs; face very finely reticulate, except lower portion of frontal fork rather coarsely reticulate; a line of hairs on inner orbits; frontal fork almost straight; inner orbits slightly sinuate; vertex finely reticulate. Ocellar triangle obtuse, POL 2.5 times OOL, OOL slightly shorter than diameter of lateral ocellus. Antennae compressed, with combined length of pedicel and flagellum about four-fifths as broad as head; pedicel fully twice as long as broad; flagellum stout, first funicular segment broader than and 1.5 times as long as pedicel; second funicular segment slightly shorter and narrower than first; club 3-segmented with a terminal spine as long as funicle; flagellum sparsely covered with long hairs.

Thorax and propodeum somewhat flattened dorso-ventrally, about 1.5 times as long as broad in dorsal view; dorsum densely and rather uniformly reticulate (fig. 12); mesoscutum with a pair of bristles; notauli restricted anteriorly, notaular depression very shallow, indistinct. Scutellum (fig. 12) weakly convex, very slightly longer than broad and with a pair of setae. Dorsellum rather finely reticulate. Propodeum smooth, medially slightly longer than dorsellum; callus with two setae. Fore wing 2.2 times as long as broad, its apical margin round; disc rather densely hairy; underside of costal cell bare; underside of submarginal vein with several hairs; basal vein pilose; speculum rather large, closed below; cubital hair line almost straight. Marginal vein and parastigma as long as breadth of wing; postmarginal vein about as long as stigmal vein; stigma large; radial cell large; marginal cillia shorter than stigmal vein. Hind wing pointed at apex; fringe as long as one quarter of breadth of wing.

Gastral petiole small, subconical, smooth, semicircularly emarginate behind. Gaster (fig. 13) ovate, more than twice as long as broad; first tergite almost smooth; second to sixth tergites with fine, weakly raised reticulation medially; last tergite smooth, slightly broader than long; ovipositor sheath slightly projecting.

Male : Unknown.

Specimens examined. Holotype : ♀, 30.V.1979, Mt. Sudo-san, GB. Paratypes : 9♀, same locality and date as holotype.

Host. Unknown.

Distribution. Korea

Remarks. The present new species agrees in most respects with the original description of the European species, *C. smaragdula* (Graham), but may be separated by the following discriminative characters: Antennal flagellum rather stout; first funicular segment 1.5 times as long as pedicel (in *smaragdula*, slightly shorter than or rarely equal to pedicel); gaster more than twice as long as broad and first gastral tergite short, about one sixth the length of entire gaster.

16. *Chrysonotomyia yamagishi* Kamijo, 1979 청암꼬마민좀벌 (신칭) [Fig. 7]

Chrysonotomyia yamagishi Kamijo, 1979. Ann. hist. -nat. Mus. natn. hung., 71 : 262; Hansson, 1990. Ent. Scand., 20 : 36.

Specimens examined. Korea—2♀, 17. VI. 1980, Suweon, GG; 1♀, 22. VII. 1982, Mt. Baikbong-san, GG; 1♀, 1♂, 30. V. 1979, Mt. Sudo-san (1000m), GB.

Host. Unknown.

Distribution. Korea.

Remarks. The following characters distinguish *yamagishi* from other *Chrysonotomyia* species: Body brownish-yellow; mid lobe of mesoscutum green with golden reflections; scutellum with a longitudinal green area medially. Gaster with black bands on the hind margins of third to fifth tergites. The first funicular segment with a pair of long stout bristles dorsally. Mid lobe of the mesoscutum densely and rather uniformly reticulate, with a pair of bristles. Scutellum more coarsely and weakly reticulate than mesoscutum.

17. *Chrysonotomyia* sp. A. 꼬마민좀벌 (가칭) [Figs. 15, 16]

Chrysonotomyia sp., Kamijo, 1978. Kontyu, 46 : 466.

Specimens examined. Korea—6♀, 3♂, ex *Phytomyza horticola*, em. 25. VI. 1979. Suweon, GG.

Host. *Phytomyza horticola* Goureau (Dipt., Agromyzidae).

Distribution. Korea, Japan.

Remarks. Dr. Kamijo kindly examined Korean specimens and identified them as *Chrysonotomyia* sp. nr. *lyonetae* (Ferrière, 1952), which is also known from Japan. It is new to Korea.

18. *Chrysonotomyia* sp. B. 흑살이꼬마민좀벌 (가칭) [Fig. 18]

Chrysonotomyia sp., Kamijo, 1979. Ann. hist. -nat. Mus. Natn. hung., 71 : 263.

Specimens examined. Korea—10♀, 3♂, ex unidentified Cecidomyiidae on *Artemisia*, em. 23. X. 1979, Haenam, JN.

Host. Cecidomyiidae (Diptera).

Distribution. Korea.

Remarks. I sent some Korean specimens to Dr. Kamijo who kindly examined them and informed me that they are possible conspecific with the European species, *Chrysonotomyia germanica* (Erdős).

19. *Closterocerus trifasciatus* Westwood, 1833 검은줄좀벌 [Figs. 19—21]

Closterocerus trifasciatus Westwood, 1833. Mag. nat. Hist., 6 : 420.

Eulophus bifasciatus Nees, 1834. Hym. Ichneum. aff. Monogr., 2 : 156.

Eulophus sesquifasciatus Ratzeburg, 1844. Ichneum. d. forstin., 1 : 164.

Entedon trifasciatus (Westwood) : Walker, 1839. Monogr. Chalciditum, 1 : 26.

Entedon bifasciatus (Nees) : Blanchard, 1840. Histoire naturelle Insectes, 3 : 280.

Derostenus (*Closterocerus*) *3-fasciatus* (Westwood) : Thomson, 1878. Hym. Scand., 5 : 270.

Closterocellus [sic!] sp., Paik, 1978. Korean J. Pl. Prot., 17 : 178.

Closterocerus trifasciatus (Westwood) : Westwood, 1840. Synopsis of the genera of British ins., p.74; Ashmead, 1904. Mem. Carnegie Mus., 1 : 340; Kurdjumov, 1912. Ent. Obozr., 12 : 235; Crawford, 1912. Proc. U. S. natn. Mus., 43 : 175; Graham, 1959. Trans. Soc. Brit. Ent., 13 : 198; Peck, 1963. Can. Ent. Suppl., 30 : 194; Peck, Boucek & Hoffer, 1964. Mem. ent. Soc. Canada, 34 : 100; Burks, 1979. in Krombein et al, Eulophidae, Cat. Hym. America North of Mexico, v.1, p.1008; Kamijo, 1979, Knotyu, 44 : 466.

Specimens examined. Korea—1 ♀, ex *Phytomyza horticola*, em. 25.V.1979, Suweon, GG; 2 ♀, 2 ♂, ex *P. horticola*, em. 11.VI.1983, Mokpo, JN; 1 ♀, ex *Agromyzid* on *Lespedeza*, em. 28.VII.1980, Temple Magok-sa, near Gongju, CN; 3 ♀, ex cynipid galls on *Quercus*, em. 18.VI.1979, Suweon, GG; 8 ♀, ex cynipid galls on *Quercus*, em. 14.VI.1980, Suweon, GG; 3 ♀, 2 ♂, ex cynipid galls on *Quercus*, em. 14.VI.1980, Gocheon, near Suweon, GG; 3 ♀, 2 ♂, ex cynipid galls on *Quercus*, em. 5.VI.1981, Suncheon, JN; 5 ♀, 4.IX.1979, 3 ♀, 28.VI.1983, 1 ♀, 6.VII.1983, Suweon, GG; 3 ♀, 2 ♂, 7.IX.1982, Gwangneung, GG; 1 ♀, 16.IX.1982, Mt. Cheonma-san, GG; 2 ♀, 13.VII.1983, Mt. Weolak-san, CB; 1 ♀, 18.VII.1983, Mt. Duryun-san, Haeman, JN; 1 ♀, 24.VI.1980, Mt. Seolak-san, GW; 1 ♀, 29.IX.1980, Gimcheon, GB; 1 ♀, 1 ♂, 3.IX.1982, Mt. Gaya-san, GN. Japan—2 ♀, 2.IX.1971, 5 ♀, 4.VI.1973, Fukuoka, Fukuoka Pref. (C. Okuma); 1 ♂, 27.V.1964, Hachijo Island (Y. Hirashima & M. Shiga); 1 ♀, 18.VII.1968, Mt. Hiko-san, Fukuoka Pref (K. Kanmiya); 1 ♀, 10.IX.1973, Kamiozogawa, Fuji, Saga Pref. (K. Yamagishi).

Host. *Phytomyza horticola* Goureau (Dipt., Agromyzidae); Cynipid galls on *Quercus* (Hym., Cynipidae).

Distribution. Korea, Japan, Europe, North America.

20. ?*Closterocerus* sp. 어리검은줄좀벌 (가칭) [Figs 22–24]

Specimens examined. Korea—2 ♀ (antenna broken), 28.VI.1983, Suweon, GG.

Host. Unknown.

Distribution. Korea.

Remarks. The shape of antennae, thorax and the venation place this species in the *Chrysocharis*-complex. The genera *Closterocerus* and *Chrysonotomyia* are closely related but distinguished by pronotal characters and antennal shape. The type species of *Closterocerus* has the pronotum distinctly margined, and the antennae dilated and compressed, while in *Chrysonotomyia* the pronotum is unmargined and the antennae are slender. In the present species, the pronotum is unmargined as in species of *Chrysonotomyia*, but the antennae are dilated and compressed. The species is intermediate in from between the genera *Closterocerus* and *Chrysonotomyia*. I have placed it is *Closterocerus* but have left it without a specific name for lack of sufficient material.

21. *Desmatocharis reticulata* Kamijo, 1986 구멍무늬민좀벌 (신칭) [Fig. 27]

Dematochris reticulata Kamijo, 1986. Kontyu, 54 : 243.

Specimens examined. Korea—2♀, 10.IX.1980, Seongnam, GG. Japan—1♀, 9.X.1973, Kamijozogawa, Fuji, Saga Pref. (K. Yamagishi).

Host. Unknown.

Distribution. Korea, Japan.

Remarks. The female of this species closely resembles that of *D. turcica*, but it is distinguished only by the following combination of characters: Entire scutellum (fig. 27) coarsely reticulate (in *turcica*, posterior half smooth and shining); gastral petiole subconical, smooth, with faint transverse ridge posteriorly (in *turcica*, broadly expanded and subrectangular posteriorly, carinate); gaster round, as long as wide (in *turcica*, distinctly longer than wide); second funicular segment quadrate (in *turcica*, distinctly longer than wide). It is newly recorded from Korea.

22. *Desmatocharis turcica* (Nees, 1835) 띠무늬민좀벌 (신칭) [Fig. 26]

Eulophus turcicus Nees, 1834. Hym. Ichneum. aff. Monogr., 2 : 155.

Entedon turcicus (Nees) : Walker, 1839. Monogr. Chalciditum, 1 : 23.

Desmatocharis turcica (Nees) : Graham, 1959. Trans. Soc. Brit. Ent., 13 : 199; Peck, Boucek & Askew, 1968. Mem. Ent. Soc. Canada, 34 : 101; Boucek & Askew, 1968, Palearctic Eulophidae, Index ent. Ins., p. 129; Kamijo, 1986. Kontyu, 54 : 244.

Specimens examined. Korea—1♀, 16.IX.1982, Mt. Cheonma-san, GG; 2♀, 25.V.1983, Chuncheon (Mt. Obong-san), GW; 1♂, 31.V.1979, Mt. Sudo-san (500m), GB. Japan—1♀, Mt. Hiko-san, Fukuoka Pref. (K. Kanmaiya); 1♂, 9.X.1973, Kamiojoekawa, Fuji, Saga Pref. (K. Yamagishi).

Host. Unknown [Japan—*Leucospilapteryx omisella* (Stainton) (Lep., Gracillariidae), *Lyonetia* sp. (Lep., Lyonetiidae)].

Distribution. Korea, Japan, Europe.

Remarks. This species is newly recorded from Korea.

23. *Neochrysocharis okazakii* Kamijo, 1978 굴파리신좀벌 [Fig. 11]

Neochrysocharis okazakii Kamijo, 1978. Kontyu, 46 : 464; Hansson, 1990. Ent. Scand., 20 : 49.

Neochrysocharis sp., Paik, 1978. Korean J. Pl. Prot., 17 : 179.

Specimens examined. Korea—6♀, 2♀, ex *Hydrellia griseola* on rice, em. 7.VII.1980, Suweon, GG; 8♀, 1♂, ex *H. griseola* on rice, em. 29.VI.1980, Yangyang, GW.

Host. *Hydrellia griseola* Fallén (Dipt., Ephydriidae).

Distribution. Korea, Japan.

24. *Omphale aetius* (Walker, 1839) 흑살이민좀벌 (신칭)

Entedon aetius Walker, 1839. Monogr. Chalciditum, 1 : 78.

Entedon metius Walker, 1839. Monogr. Chalciditum, 1 : 90.

Omphale aetius (Walker) : Graham, 1959. Trans. Soc. Brit. Ent., 13 : 202; Graham, 1963. ibidem, 15 : 266; Boucek & Askew, 1968. Palearctic Eulophidae, Index ent. Ins., p.132; Kamijo, 1979. Ann. hist.-nat. Mus. natn. hung., 71 : 264.

Specimens examined. Not collected.

Host. Unknown.

Distribution. Korea, Europe.

Remarks. *O. aetius* was reported from northern part of the Korean peninsula by Kamijo (1979). Additional Korean material has not been studied. The biology of this species is unknown.

25. *Omphale clypeale* (Thomson, 1878) 흰혹살이민좀벌 (신칭)

Derostenus (Secodes) clypealis Thomson, 1878. Hym. Scand., 5 : 270.

Omphale clypealis (Thomson) : Graham, 1963. Trans. Soc. Brit. Ent., 15 : 241; Boucek & Askew, 1968. Palearctic Eulphidae, Index ent. Ins., p.133.

Specimens examined. Korea—9♀, 16.V.1983, Suweon, GG.

Host. Unknown.

Distribution. Korea, Europe.

Remarks. This species is easily distinguished from other of the genus in having the clypeus entirely yellow. In Europe, *O. clypealis* has been reared from the cecidomyiid fly, *Dasyneura brassicae* Winnertz. It is newly recorded from Korea.

26. *Omphale lugens* (Nees, 1834) 긴혹살이민좀벌 (신칭)

Eulophus lugens Nees, 1834. Hym. Ichneum. aff. Monogr., 2 : 176.

Entedon navius Walker, 1839. Monogr. Chalciditum, 1 : 92.

Entedon coactus Ratzeburg, 1848. Ichneum. d. Forstins., 2 : 167.

Secodes fagi Foerster, 1856. Hym. Stud., 2 : 81; Dalla Torre, 1898. Cat. Hym., 5 : 29.

Entedon coactus (Ratzeburg) : Thomson, 1878. Hym. Scand., 5 : 270.

Omphale navius (Walker) : Graham, 1959. Trans. Soc. Brit. Ent., 13 : 201; Graham, 1963. ibidem, 15 : 255.

Secodes lugens (Nees) : Erdős, 1956. Fol. ent. hung. (s.n.), 9 : 23.

Omphale lugens (Nees) : Boucek & Askew, 1968. Palearctic Eulophidae, Index ent. Ins., p.134; Kamijo, 1979. Ann. hist. -nat. Mus. natn. hung., 7 : 263.

Specimens examined. Not collected.

Host. Unknown.

Distribution. Korea, Europe.

Remarks. This species was reported from Korea by Kamijo (1979). Other Korean material is not available. In Europe, *O. lugens* has been reared as a primary larval endoparasite of the cecidomyiid fly, *Mikiola fagi* Hartig.

27. *Teleopteris erxias* (Walker, 1848) 유리날개민좀벌 (신칭) [Fig. 25]

Entedon erxias Walker, 1848. List. Hym. Ins. Brit. Mus., 2 : 227.

Omphale scutellatus Ferrière, 1952. Mitt. Schweiz. ent. Ges., 25 : 34.

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Metasecodes erxias (Walker) : Graham, 1959. Trans. Soc. Brit. Ent., 13 : 199.

Teleopteris erxias (Walker) : Viggiani, 1967. Boll. Lab. Ent. agr. Filippo Silvestri, 25 : 140; Boucek & Askew, 1968. Palearctic Eulophidae, Index ent. Ins., p.129; Boucek, 1974. Acta ent. Jugoslavica, 10 : 123; Kamijo, 1978, Kontyu, 46 : 467.

Specimens examined. Korea—1♂, 4.IX.1980, Suweon, GG; 2♀, 1♂, 17.IX.1982, Mt. Baikbong-san, GG; 1♂, 9.IX.1982, Gwangneung, GG; 1♀, 3.IX.1983, Haenam (Mt. Duryun-san), JN. Japan—2♀, 22.V.1983, Fukuoka, Fukuoka Pref. (J. C. Paik); 1♀, 13.VI.1972, 1♀, 4.VI.1973, Fukuoka, Fukuoka Pref. (C. Okuma); 1♀, 27.X.1972, Fukuoka, Fukuoka Pref. (Y. Yoneda); 1♀, 4.VII.1973, Kamiozoegawa, Fuji, Saga Pref. (K. Yamagishi); 1♂, 22.IX.1975, Hiratsuto(700m), Kawai, Iwate Pref. (K. Yamagishi).

Host. Unknown [Japan—*Phyllonorycter lacineatae* (Kumata) (Lep., Gracillariidae); *Phytomyza horticola* Gourea, *P. ranuculi* Schrank, *Agromyza oryzae* Munakata (Dipt., Agromyzidae). Europe—*Cassida nebulosa* Linnaeus (Col., Chrysomelidae); *Heterarthrus ochropodus* Klug (Hym., Tenthredinidae); *Tetrastichus rhosaces* Walker (Hym., Eulophidae)].

Distribution. Korea, Japan, Europe, North America.

Remarks. This species is distinguished from *delucchi*, another Palearctic species, mainly by the longer marginal fringe of the wings and the metallic luster of the body. It is newly recorded from Korea.

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한국産 민좀벌亞科의 分類 II (벌目 : 좀벌課)

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한국産 민좀벌亞科의 정리한 결과 총 22種이 분류 동정되었다. 이중 1新種, 수도꼬마민좀벌(*Chrysonotomyia sudoensis* n. sp.)을 기재, 보고하며 13種을 우리나라 미기록종으로 보고한다.

검색어 : 분류, 벌目, 좀벌科, 민좀벌亞科.

(Received : July 15, 1992)

EXPLANATION OF FIGURES

- Fig. 1. *Chrysocharis prodice* (Walker). Thorax.
Fig. 2. *Chrysocharis assis* (Walker). Thorax.
Fig. 3. *Chrysocharis* sp. A. Scutellum, propodeum and gastral petiole.
Fig. 4. *Chrysocharis pentheus* (Walker). Thorax.
Fig. 5. *Chrysocharis viridis* (Nees). Head and thorax.
Fig. 7. *Chrysocharis albicoxis* Erdős. Head and throat.
Fig. 8. *Chrysocharis crassiscapus* (Thomson). Scutellum and propodeum.
Fig. 9. *Chrysocharis pubicornis* (Zetterstedt). Thorax.
Fig. 10. *Chrysocharis polyzo* (Walker). Thorax.
Fig. 11. *Neochrysocharis okazakii* Kamijo. Thorax.
Fig. 12. *Chrysonotomyia sudoensis* n. sp. Thorax.
Fig. 13. *Chrysonotomyia sudoensis* n. sp. Abdomen.
Fig. 14. *Chrysonotomyia cinctiventris* (Ashmead). Thorax and abdomen.
Fig. 15. *Chrysonotomyia* sp. A. Thorax.
Fig. 16. *Chrysonotomyia* sp. A. Abdomen.
Fig. 17. *Chrysonotomyia yamagishii* Kamijo. Thorax.
Fig. 18. *Chrysonotomyia* sp. B. Thorax.
Fig. 19. *Closterocerus trifasciatus* Westwood. Head and thorax.
Fig. 20. *Closterocerus trifasciatus* Westwood. Forewing.
Fig. 21. *Closterocerus trifasciatus* Westwood. Female antenna.
Fig. 22. *Closterocerus* sp. Thorax.
Fig. 23. *Closterocerus* sp. Forewing.
Fig. 24. *Closterocerus* sp. Female antenna.
Fig. 25. *Teleopterus erxias* (Walker). Thorax.
Fig. 26. *Desmatocharis turcica* (Nees). Head and thorax.
Fig. 27. *Desmatocharis reticulata* Kamijo. Scutellum, propodeum and basal tergite.





